Abstract

An improved circuit assembly for use in an implantable medical device, and a method of making the assembly is disclosed. The circuit assembly includes a core portion formed of a thermoplastic material using either an injection molding process or a machining process. This core portion is adapted to be fitted with at least one electrically-conductive circuit component such as a connector member, a set-screw block, or a conductive jumper member. In one embodiment of the invention, the core portion includes multiple receptacles or other spaces that are adapted to be loaded with the various circuit components. Core portion may further be provided with groove and ridge members designed to position and retain the circuit components at predetermined locations around the various surfaces of the core portion. One or more of the circuit components may be welded or soldered together to form electrical contacts. Next, this loaded core assembly is prepared for an overmolding process by loading bushings into apertures of the various conductive circuit components to prevent these apertures from receiving thermoplastic material during the overmold process. The prepared and loaded core assembly is positioned into a second-shot mold assembly, and a second-shot of thermoplastic material is injected into the mold. This thermoplastic material is heated to a temperature at, or above, the melting point of the material to create a bond between the core portion and the overmold material. To achieve this, the ratio of the mass of the core element as compared to that of the overmold material is made as small as possible so that the heat energy from the mold is able to adequately heat the core portion. Bonding may further be enhanced by providing ridges on the surface of the core portion that are melted during the overmold process, and/or by pre-heating the core portion prior to injecting the second shot of thermoplastic material into the mold.